

WHAT IS CLAIMED IS:

1. 1. A ball launching apparatus comprising:
2 a ball propulsion mechanism at least partially housed in a housing, said ball propulsion
3 mechanism being configured and located to propel a ball from said housing along a propulsion
4 axis that is at a fixed location with respect to said housing, said housing having a first base
5 portion and a second base portion, said first base portion being inclined with respect to said
6 second base portion, said ball launching apparatus being self-supported when said first base
7 portion rests upon a planar support surface and when said second base portion rests upon the
8 planar support surface, said propulsion axis being at a first position when said first base portion
9 rests upon the planar support surface, said propulsion axis being at a second position when said
10 second base portion rests upon the planar support surface, said propulsion axis when at said
11 second position being obliquely angled with respect to said propulsion axis when at said first
12 position.

1. 2. The ball launching apparatus of claim 1, said ball propulsion mechanism being fixedly
2 attached to at least one item of said ball launching apparatus.

1. 3. The ball launching apparatus of claim 1, said propulsion axis being parallel with the
2 planar support surface when said propulsion axis is located at said first position, said propulsion
3 axis being at an angle with respect to the planar support surface when said propulsion axis is
4 located at said second position.

1. 4. The ball launching apparatus of claim 1, said propulsion axis being at a first angle with
2 respect to the planar support surface when said propulsion axis is located at said first position,
3 said propulsion axis being at a second angle with respect to the planar support surface when said
4 propulsion axis is located at said second position, said second angle being greater than said first
5 angle.

1. 5. The ball launching apparatus of claim 4, said first angle being between 1-30 degrees,
2 said second angle being between 10 – 50 degrees.

1 6. The ball launching apparatus of claim 5, said first angle being between 1-20 degrees, said
2 second angle being between 15 – 45 degrees.

1 7. The ball launching apparatus of claim 6, said first angle being approximately 10 degrees,
2 said second angle being approximately 34 degrees.

1 8. The ball launching apparatus of claim 1, said first base portion including a flat surface
2 that abuts the planar support surface when said first base portion rests upon the planar support
3 surface.

1 9. The ball launching apparatus of claim 8, said second base portion including a flat surface
2 that abuts the planar support surface when said second base portion rests upon the planar support
3 surface.

1 10. The ball launching apparatus of claim 9, said flat surface of said first base portion and
2 said flat surface of said second base portion having a common edge.

1 11. The ball launching apparatus of claim 1, said ball propulsion mechanism including at
2 least one motor and a roller driven by said motor.

1 12. The ball launching apparatus of claim 1, said ball propulsion mechanism including two
2 opposed rollers.

1 13. The ball launching apparatus of claim 1, said ball propulsion mechanism including a
2 chute from which the ball is propelled.

1 14. The ball launching apparatus of claim 1, further comprising a ball feed mechanism
2 configured and located to intermittently feed balls to said ball propulsion mechanism.

1 15. The ball launching apparatus of claim 14, further comprising a channel, said channel
2 being oriented with respect to said ball feed mechanism such that balls in said channel are fed by
3 gravity to said ball feed mechanism when said first base portion rests upon the planar support
4 surface and when said second base portion rests upon the planar support surface.

1 16. A method comprising:

2 placing a ball launching apparatus at a first self-supported position where a first base
3 portion of a housing of the ball launching apparatus rests on a planar support surface and where a
4 propulsion axis of a ball propelled from the ball launching apparatus is at a first location, the
5 housing having a second base portion that is inclined with respect to the first base portion; and

6 placing the ball launching apparatus at a second self-supported position where the second
7 base portion rests on the planar support surface and where the propulsion axis is at a second
8 location, the propulsion axis when at the second location being obliquely angled with respect to
9 the propulsion axis when at the first location.

1 17. A ball launching apparatus comprising:

2 a ball propulsion mechanism for propelling a ball; and

3 a ball feed mechanism for intermittently feeding balls to said ball propulsion mechanism,
4 said ball feed mechanism having a rotatable wheel defined by at least a first member and a
5 second member, said wheel having a recess therein for receiving a ball and that is located
6 between a surface of said first member and a surface of said second member, said second
7 member being moveable with respect to said first member in a direction opposite to a direction
8 of rotation of said wheel so as to increase a size of said recess.

1 18. The ball launching apparatus of claim 17, said first member having a circular periphery
2 with a concave indentation, said concave indentation including said surface of said first member.

1 19. The ball launching apparatus of claim 17, said second member having a periphery shaped
2 like a sector of a circle.

1 20. The ball launching apparatus of claim 17, further comprising a shaft mounted to said first
2 member, the second member having a throughole that slidably receives said shaft such that said
3 second member is rotatable about said shaft.

1 21. The ball launching apparatus of claim 20, said second member being slidably coupled to
2 said first member such that said second member is movable relative to said first member when
3 rotating about said shaft.

1 22. The ball launching apparatus of claim 20, said first member having an elongated slot that
2 receives a protrusion of said second member, said protrusion being slidable with respect to said
3 first member along a length of said elongated slot when rotating about said shaft.

1 23. The ball launching apparatus of claim 17, said second member being movable from a first
2 position to a second position as measured relative to said first member, further comprising:
3 a spherical ball having a diameter and an oval ball having a length that is greater than
4 said diameter, said length being measured along a longitudinal center axis of said oval ball, said
5 recess being large enough to receive said spherical ball when said second member is located at
6 said first position, said recess being too small to receive said oval ball when said second member
7 is located at said first position, said recess being large enough to receive said length of said oval
8 ball when said second member is located at said second position.

1 24. The ball launching apparatus of claim 17, said surface of said second member being
2 biased toward said surface of said first member.

1 25. The ball launching apparatus of claim 17, further comprising a spring that biases said
2 second member toward said first member.

1 26. The ball launching apparatus of claim 17, said first member having an elongated slot that
2 receives a protrusion of said second member, said protrusion being slidable along a length of said
3 elongated slot.

1 27. The ball launching apparatus of claim 17, further comprising a housing that at least
2 partially houses said rotatable wheel, said housing including a ledge that defines a surface along
3 which a ball received by said recess abuts when said wheel rotates.

1 28. The ball launching apparatus of claim 17, further comprising a channel for receiving a
2 plurality of balls, said channel being oriented with respect to said ball feed mechanism such that
3 balls in said channel are fed by gravity to said ball feed mechanism.

1 29. The ball launching apparatus of claim 28, said wheel being located such that a portion of
2 said wheel prevents a ball in said channel from being fed to said ball propulsion mechanism
3 during at least a portion of a revolution of said wheel.

1 30. The ball launching apparatus of claim 17, further comprising:
2 a motor;
3 a drive train rotatably connecting said motor and said wheel, said drive train including a
4 clutch for limiting transmission of power from said motor along said drive train when torque on
5 said wheel or in said drive train exceeds a predetermined value.

1 31. The ball launching apparatus of claim 17, said ball propulsion mechanism including two
2 opposed rollers.

1 32. A ball feed mechanism for intermittently feeding balls to a ball propulsion mechanism,
2 said ball feed mechanism comprising:
3 a rotatable wheel defined by at least a first member and a second member, said wheel
4 having a recess therein for receiving a ball and that is located between a surface of said first
5 member and a surface of said second member, said second member being moveable with respect
6 to said first member so as to increase a size of said recess.

1 33. A ball launching apparatus comprising:
2 a ball propulsion mechanism for propelling differently shaped balls;

3 a channel for receiving the differently shaped balls, said channel being oriented such that
4 differently shaped balls are fed by gravity to a ball feed mechanism, said ball feed mechanism
5 including a wheel having a recess therein that is configured and located to receive a spherical
6 shaped ball, rotate with said wheel to feed the received spherical shaped ball to the ball
7 propulsion mechanism, and thereafter change size to receive an oval shaped ball from the
8 channel.

1 34. A ball launching apparatus comprising:
2 a ball propulsion mechanism for propelling differently shaped balls; and
3 a ball feed mechanism that is configured and located to receive one of the differently
4 shaped balls in a recess of a member and to feed the one received ball to said ball propulsion
5 mechanism, said ball feed mechanism including means for changing a size of said recess to
6 accommodate the differently shaped balls.

1 35. A method comprising:
2 changing the size of a recess in a wheel of a ball feed mechanism to accommodate
3 differently shaped balls for feeding to a ball propulsion mechanism of a ball launching apparatus.

1 36. A method comprising:
2 receiving in a recess of a wheel a first ball having a first shape;
3 rotating the wheel to deliver the first ball to a ball propulsion mechanism;
4 changing a size of the recess to accommodate a second ball having a second shape, the
5 second shape being different than the first shape;
6 receiving the second ball in the recess; and
7 rotating the wheel to deliver the second ball to the ball propulsion mechanism.

1 37. A ball launching apparatus comprising:
2 a ball propulsion mechanism having a roller for propelling balls from said ball launching
3 apparatus, said ball propulsion mechanism including a motor coupled to drive rotation of said
4 roller; and

5 a ball feed mechanism having a rotatable wheel, said wheel having a recess that is
6 configured and located to receive one of the balls during rotation of said wheel and to feed the
7 received ball to said ball propulsion mechanism during rotation of said wheel; and
8 a drive train rotatably connecting said motor and said wheel.

1 38. The ball launching apparatus of claim 37, said roller being one of two opposing rollers.

1 39. The ball launching apparatus of claim 38, said motor being one of two motors that drive
2 rotation of said two opposing rollers.

1 40. The ball launching apparatus of claim 37, said drive train including a clutch.

1 41. A ball launching apparatus, comprising:
2 a ball propulsion mechanism having a motor;
3 a ball feed mechanism for feeding balls to said ball propulsion mechanism, said ball feed
4 mechanism including a rotatable wheel having a recess therein; and
5 means for rotatably connecting said motor and said wheel such that said motor drives
6 rotation of said wheel.